A Tabu Search Approach for the Design of Variable Structure Load Frequency Controller Incorporating Model Nonlinearities

Al-Hamouz, Z. (2007)

JEEEC . pp. 264-270.

Abstract

This paper presents a new method of designing Variable Structure Controllers (VSC) applied to the Load Frequency Control (LFC) problem. The proposed method formulates the design of VSC as an optimization problem and utilizes Tabu Search Algorithm (TS) to find the optimal settings of the controller. The objective function used in the optimization process guarantees enhancement of the controller performance and reduces VSC chattering. The designed VSC is applied to LFC model that incorporates the nonlinearity of the Generation Rate Constraint (GRC). Furthermore, the complexity of the controller is reduced by using only the accessible states in designing the VSC. Comparison with other LFC methods reported in literature validates the significance of the proposed VSC design.